REMARKS

Claims 1-30 will be pending upon entry of the present amendment. Claims 1, 3, 5, and 8 have been amended, and new claims 21-30 are herewith submitted. Applicants thank the Examiner for entering the recent amendment. Inasmuch as the Examiner has not yet fully addressed all of the arguments and positions put forth in the recent amendment, the present remarks may be considered supplemental, and will be directed primarily in support of the new and amended claims of the present amendment, and also in response to the comment provided by the Examiner in the recent advisory action. Applicants request that the Examiner give consideration to the remarks of the amendment of August 24, 2004, as well as the present remarks in considering the allowability of the currently pending claims.

In rejecting claim 1 in the Office Action of May 24, 2004, the Examiner relies on Linn to teach or suggest all the limitations of the claim, with the exception of the step of encapsulating an integrated circuit die. The Examiner relies on Dlugokecki in rejecting the encapsulating step. The encapsulating step was removed from claim 1 in the amendment of August 24, 2004. The Examiner has not argued that Dlugokecki teaches or suggests any other limitation of any of the claims at issue. Accordingly, applicants will not further address Dlugokecki in arguing the allowability of the currently pending claims.

Claim 1 has been amended to recite, in part, "exposing said integrated circuit package to a physical plasma for a selected time and strength to remove an upper layer of material from the package." This amendment to claim 1 is a broadening amendment, and the limitation to a noble gas ion plasma is now found in dependent claim 21. One having ordinary skill in the art will recognize that a physical plasma etch is *nonselective*, with respect to the composition of the surfaces upon which it impinges. It is additionally known, that, in order for an etch process to be selective, the etch must be a *chemical* etch, rather than a physical etch. Accordingly, *any reference that discloses selectivity* as one of the features of the process disclosed *is doing so in reference to a chemical etch* rather than a physical etch.

Linn fails to disclose employing a physical plasma as recited in claim 1, teaching, instead, chemical etches in all disclosed embodiments. For example, Lin states, "An IC package...when cleaned according to the inventive principles described above...show[s] no

noticeable physical deterioration produced on the exposed metal parts." (Column 4, lines 49-54). Clearly, not only is Linn's plasma cleaning process selective, this selectivity is considered desirable by Linn. Linn includes many other passages supporting this position, which are discussed in more detail in the remarks of the previous amendment.

Claim 21 includes the following limitation that was previously part of claim 1: "wherein the physical plasma is a noble gas ion plasma." In the Examiner's recent advisory action, the Examiner states, "In claim 1, applicant only claimed 'a noble gas ion plasma' which does not preclude that the noble gas ion plasma is obtained in the presence of a pure noble gas. Therefore, for the broadest interpretation, 'an oxygen and argon plasma atmosphere' are disclosed in Linn's reference still meet the claimed limitations."

While the Examiner's statement is somewhat confusing to the applicants, the applicants surmise that the Examiner is making one of two arguments: either, that a noble gas ion plasma may be formed in an atmosphere that includes gasses other than noble gasses, in which case an oxygen and argon atmosphere meets the claimed limitation, or that a noble gas ion plasma may be formed in the presence of a mix of noble gasses, and that oxygen and argon are both noble gasses and thus meet the claimed limitations. If the applicants have misstated the Examiner's position as articulated in the recent advisory action, applicants respectfully request that the Examiner provide further clarification of the statement.

Applicants observe that one having ordinary skill in the art would understand the term "noble gas ion plasma" as referring to a plasma formed in an atmosphere that is substantially free of non-noble gasses. Accordingly, the presence of a significant component of non-noble gas in a plasma atmosphere precludes the formation of a noble gas ion plasma as recited in claim 21. There are six known noble gasses: helium, neon, argon, krypton, xenon, and radon. Oxygen is not a noble gas, but is rather, a reactive gas. Accordingly, a noble gas ion plasma cannot be formed in an atmosphere in which oxygen, or for that matter, any other reactive gas, is a significant component. All of the embodiments disclosed by Linn disclose plasma atmospheres that include reactive gasses. Therefore, none of the plasmas taught are noble gas ion plasma. Thus, claim 21 is allowable over Linn on its own merits.

While claim 3 is allowable as depending from an allowable base claim, claim 3 is also allowable on its own merits. Claim 3 recites, "wherein said physical plasma is obtained in the presence of a pure noble gas." One having ordinary skill in the art will recognize that reference to a pure gas indicates an atmosphere of a pure elemental gas, unmixed with any other gas. In rejecting this claim, the Examiner has relied on Linn to teach the limitations of claim 1, and Arita to teach the limitations of claim 3. However, this combination is inappropriate for the purpose of rejecting claim 3. As discussed previously in these remarks and in the remarks of the prior amendment, Linn teaches a plasma etch that is selected with respect to the surfaces of the chip packages so as to remove only impurities without effecting the packages themselves. Clearly, Linn teaches away from a pure noble gas etch, and so provides no motivation to combine. Additionally, since it is known in the art that an etch employing an atmosphere of a pure noble gas is nonselective, and cannot be made selective without the addition of a reactive gas, substituting Arita's argon for Linn's mixed atmosphere would render Linn's method inoperative. Accordingly, for at least these reasons, such a combination is inappropriate. Claim 3 is clearly allowable over the cited art.

In rejecting claim 5, the Examiner relies on Linn to teach all the limitations remaining in claim 1, combined with Chang to teach the additional limitations of claim 5. However, it has been demonstrated that Linn is inadequate to teach the physical plasma of claim 1, and Chang is insufficient to remedy this failing. Chang teaches selective etches employing a variety of reactive gasses, including BCl_3, NF_3, SF_6, and hydrogen (column 3, lines 18-20). Accordingly, Change fails to teach or suggest a physical plasma as recited in claim 1. Even if Chang were sufficient to provide the missing teachings, there is no motivation to combine Chang with Linn, inasmuch as Chang is directed to various steps in the process of forming electronic circuits on a semiconductor wafer, including cleaning and deposition of tungsten on the semiconductor wafer, while Linn is directed to an entirely different process that is performed after the circuits have been fully formed on the wafer, the wafer has been cut into dice, each of the dice has been mounted on a lead frame, and each die and lead frame segment has been encapsulated. Clearly, Chang offers no teaching related to the handling or processing of microchip packages, but is directed to process steps that are much removed therefrom.

Accordingly, there is no motivation to combine Chang with Linn for the purpose of rejecting claim 5 under 35 U.S.C. § 103.

Claim 14 recites, in part, "exposing the package surface to a noble gas ion plasma." As has been explained, one having ordinary skill in the art would interpret the term "noble gas ion plasma" as referring to a plasma formed in an atmosphere that is substantially free of reactive gasses. The Examiner relies on Linn to teach or suggest this limitation. However, each of the embodiments disclosed by Linn includes a reactive gas component in the plasma chamber atmosphere, such as oxygen, ammonia, and fluorine (see column 4, lines 42-65). Additionally, Linn teaches the desirability of the selectivity afforded by the chemical etch processes taught, and accordingly, teaches away from purely physical etches. Inasmuch as a noble gas ion plasma can only be used in a physical etch process, Linn neither teaches nor suggests such a process step. Clearly, claim 14 is allowable over Linn in combination with Dlugokecki.

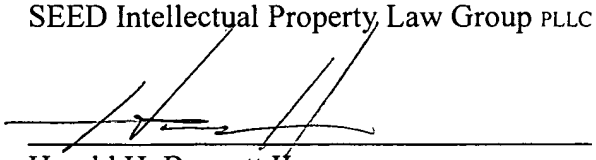
New claim 22 recites, in part, "cleaning the package, the cleaning step including exposing the package to only one plasma etch step." Support for this limitation may be found in the specification on page 4, beginning at line 24, which states, "In particular, according to the present invention, cleaning of the integrated circuit package surface is carried out by a single step process, in which the integrated circuit package is exposed to a physical plasma...." This limitation is neither taught nor suggested by any of the art cited in the present case. In particular, Linn teaches various two-step etches in which plasmas of different formulations are used in succession. Accordingly, claim 22, together with dependent claims 23-30, is allowable over the cited art.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

SEED Intellectual Property Law Group PLLC



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